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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/610,094	06/30/2000	Glenn David Crabtree	13DV13689	3123

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EXAMINER

STEVENS, THOMAS H

ART UNIT	PAPER NUMBER
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2123

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/610,094

Applicant(s)

CRABTREE ET AL.

Examiner

Thomas H. Stevens

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2000.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-20 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. Figures 1-3 should be labeled as prior art. These figures merely illustrate well-known concepts of transmission lines and FEM.

### ***Claim Rejections - 35 USC § 112***

2. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "pipe" in claims 7,9-11,14,15,19 and 20 is used by the claim to mean "waveguide" or "transmission lines". The term is indefinite because the specification does not clearly redefine the term.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 6-9, 13-20 are rejected under 35 U.S.C. 102(a) as being anticipated by Borka et al (2000).

Borka et al teaches a radical reduction in the complexity of the model for radar and modulation from jet engines, which encompass using finite element method (FEM) and radar cross section (RCS) to obtain a 3-D representation of the aircraft engine (see sections II-III).

5. Claims 1-3,6-9,13-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Ross et al (1995).

Ross et al teaches a radical reduction in the complexity of the model for radar and modulation from jet engines, which encompass using finite element method (FEM) (pg. 31, paragraph 2) and radar cross section (RCS) to obtain a 3-D representation of the aircraft engine (see figures 1-4).

***Claim Rejections - 35 USC § 103***

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4 and 5 rejected under 35 U.S.C. 103(a) as anticipated by Ross et al (1995), in view of Kameari (1998).

Ross et al teaches a radical reduction in the complexity of the model for radar and modulation from jet engines, which encompass using finite element method (FEM) (pg. 31, paragraph 2) and radar cross section (RCS) to obtain a 3-D representation of the aircraft engine (see figures 1-4); but does not teach second order edge elements.

Kameari teaches a new type of second order elements for simplexes with nodes and edges being 14 and 24 respectively, in a tetrahedral environment (abstract).

One of ordinary skill in the art at the time of invention would have modified the teachings of Ross in view of Kameari, since it would advantageous for proper spacing between nodes (Kameari: pg. 1397, conclusion, lines 1-5) which are centered, for capturing each sector of the aircraft (Barka: pg. 705, column 2, lines 1-12).

9. Claim 12 is rejected under 35 U.S.C. 103(a) as anticipated by Ross et al (1995), in view of Greenwood (1999).

Ross teaches a radical reduction in the complexity of the model for radar and modulation from jet engines, which encompass using finite element method (FEM) (pg. 31, paragraph 2) and radar cross section (RCS) to obtain a 3-D representation of the aircraft engine (see figures 1-4); but does not teach methods of impedance matching of cylindrical objection relating to FEM.

Greenwood teaches encompassing FEM with impedance matching techniques to eliminate backscatter from body of revolution (BOR). The BOR is composed of a perfect conductor and impedance surface and arbitrary inhomogeneous materials. The method uses edge-based vector basis functions to expand the transverse field components and node-based scalar basis functions to expand the angular moment. The use of vector basis functions eliminates the problem of spurious solutions suffered by other three component FEM formulations (abstract).

One of ordinary skill in the art at the time of invention would have modified the teachings of Ross in view of Greenwood because: 1) reflections indicate wasted energy and 2) by doing, so thus eliminate spurious emission from the waveguide so as to have a proper 3-D representation of the aircraft part (see pg. 620-623).

10. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as anticipated by Ross et al (Thesis: 1995), in view of Lowther et al. (Thesis: 1978).

Ross et al teaches a radical reduction in the complexity of the model for radar and modulation from jet engines, which encompass using finite element method (FEM) (pg. 31, paragraph 2) and radar cross section (RCS) to obtain a 3-D representation of the aircraft engine (see figures 1-4); but doesn't teach super-elements.

Lowther et al teaches a finite recursion technique for a solution for creating a super element, thus reducing nodes (abstract; figure 1).

One of ordinary skill in the art at the time of invention would have modified

the teachings of Ross in view of Lowther since creating a super- element reduces the amount of nodes in a special area, thus reducing the post-computation time.

***Correspondence Information***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Stevens whose telephone number is (703) 305-0365, Monday-Friday (8:30 am- 5:30 pm) or contact Supervisor Mr. Kevin Teska at (703) 305-9704. The fax number for the group is 703-872-9306.

Any inquires of general nature or relating to the status of this application should be directed to the Group receptionist whose phone number is (703) 305-3900.

February 20, 2004

THS

  
HUGH JONES Ph.D.  
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